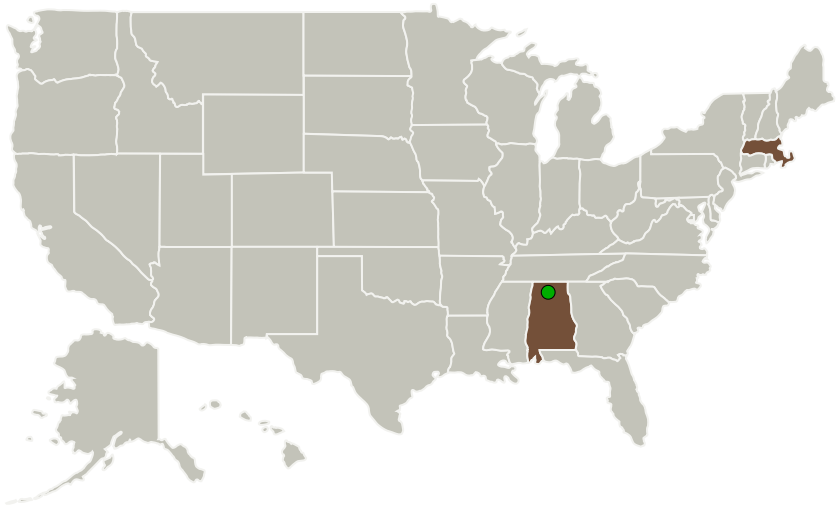
Scale-up of Nano-Engineered Anti-Reflection Coating Process for Large Plastic Optics, Phase I

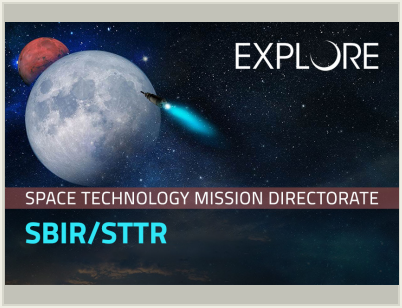
Completed Technology Project (2011 - 2011)

Project Introduction

In a recently completed NASA SBIR program, Agiltron and the Massachusetts Institute of Technology developed a novel nanoporous UV anti-reflection coating technology for complex plastic optics. This coating is based on recent breakthroughs in self-assembled low index multilayer structures achieved at MIT, combined with Agiltron's mist coating processes. The UV AR coatings consisted of inter-connected oxide nanoparticles in the form of a 3D porous network. We successfully demonstrated this AR coating on a 3" by 3" PMMA plate and 1.25" diameter Fresnel lens with suppressed surface reflection below 1% in the UV range. The coating adhesion also passed standard optical surface cleaning procedures recommended by NASA. In this current SBIR program, Agiltron proposes to scale up the coating process to coat large scale PMMA Fresnel lens surfaces up to 0.25 meters in diameter in Phase I and 1 meter in diameter in Phase II. Agiltron will closely work with NASA to develop the evaluation process for coating uniformity and optical performance.

Primary U.S. Work Locations and Key Partners





Scale-up of Nano-Engineered Anti-Reflection Coating Process for Large Plastic Optics, Phase I

Table of Contents

Scale-up of Nano-Engineered Anti-Reflection Coating Process for Large Plastic Optics, Phase I

Completed Technology Project (2011 - 2011)

Organizations Performing Work	Role	Type	Location
Nanotrons Technologies	Lead Organization	Industry	Woburn, Massachusetts
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Massachusetts

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138482)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nanotrons Technologies

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

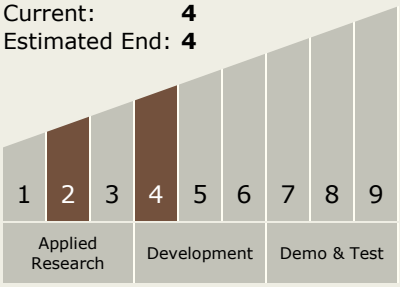
Carlos Torrez

Principal Investigator:

Sangyup Song

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Scale-up of Nano-Engineered Anti-Reflection Coating Process for Large Plastic Optics, Phase I

Completed Technology Project (2011 - 2011)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.1 Mirror Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System